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*Royal Netherlands Institute.*

Verhanderlingen der Erste Klasse van het Kon. Nederlandshe Institut van Wettenschappen, &c., te Amsterdam. 3e Reeks, 1e – 3e Deel. 4to. Amsterdam, 1848 – 50.

Jaarboek. Voor 1850. 8vo. Amsterdam.

Tijdschrift voor de Wis-en Natuurkundige Wetenschappen. 1e, 2e, und 3e Deel. 8vo. Amsterdam, 1848 – 49.

*Royal Society of Sciences, Upsal.*

Nova Acta Regia Societatis Scientiarum Upsaliensis. Vols. XI. – XIV. Part I. 4to. Upsal, 1839 – 48.

*Royal Society of Northern Antiquaries.*

Mémoires. 1840 – 43, 1844, and 1845 – 47. 3 vols. 8vo. Copenhagen, 1844 – 47.

Guide to Northern Archæology. 8vo. London, 1848.

List of the Society, January, 1845, and January, 1850.

General Anniversary Meeting, February 15th, 1851.

*Royal Danish Academy.*

Oversight over det Kgl. Danske Videnskabernes Selskabs Forhandlinger. 1847 – 48. 8vo. 2 vols. Kjobenhavn.

Skrifter. 5e Rœkke. Natur. og Math. Afdeling. 1e Bind. 4to. Kjobenhavn, 1849.

*The Russian Government.*

Recueil d'Observations Météorologiques et Magnetiques faites dans l'Étendue de l'Empire de Russie. 1846, Parts I. et II. 4to. St. Petersbourg, 1849.

Annales de l'Observatoire Physique Central de Russie, 1847, Parts I., II., et 1848, III. Part. 4to. St. Petersbourg, 1850 – 51.

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**Three hundred and fifty-third meeting.**

December 2, 1851. — MONTHLY MEETING.

The PRESIDENT in the chiar.

Professor Peirce communicated a mathematical paper, entitled "A Case in the Theory of Probabilities."

Mr. Desor made some remarks upon the origin of the contorted strata of sand and clay in the diluvial deposits, which had recently been the subject of some discussion in the Geological Society of London. Instances of similar strata occur frequently in the neighborhood of Boston, and throughout New

England. They have been ascribed by Professor Hitchcock and others to the action of icebergs pressing laterally against the strata. This theory, however, is no longer admissible, since it is not uncommon to find such curved and looped strata alternating with others that are perfectly horizontal both above and below; besides, these peculiar loops and curves are traceable for too great a distance (several hundred feet) to be the result of a mere lateral action. It has been suggested by Mr. Trimmer, that they are probably the result of masses of ice stranded on the shores, and afterwards buried under sand and mud. In consequence of subsequent melting, the overlying sand and mud would necessarily subside, and, by their subsidence, cause such curved outlines as we witness in the drift. This theory is unquestionably the correct one; and, moreover, its correctness has been experimentally demonstrated. Mr. Edward C. Cabot several years ago buried pieces of ice in the sand of the beach at Beverly. When he came to examine the superincumbent strata after the melting of the ice, he found them contorted and looped in a manner resembling very much the curvatures of the drift strata. It is to be hoped that Mr. Cabot will, at some future meeting, communicate to the Academy the results of his experiments.

Dr. W. F. Channing exhibited to the Academy two discs of paper from the Boston and New York and Boston and Burlington lines of the Bain Telegraph, being the record of the great aurora of the 29th of September. On the evening of that day, the sky was overcast in Boston, but the attention of the telegraph operators on all the lines was early drawn to a remarkable display of electric phenomena. All of the telegraphic instruments were overpowered by currents of atmospheric electricity coming in over the wires, lasting, unlike the usual atmospheric disturbances, for several minutes at a time, and in opposite directions in the early and later part of the evening. The strength of the atmospheric current was generally estimated as about equal to one hundred Grove's elements.

The instruments of the Morse and House Telegraphs were

merely locked by the atmospheric current, without furnishing means of observing its direction. Fortunately, the current gives opposite results on Bain's prepared paper when traversing it in different directions. In the specimens exhibited, the paper was seen to be marked with deep blue lines, where the wire pen-point had been the negative pole of the atmospheric current, and the slightly blue paper was seen to be bleached when it had been the positive pole.

The most remarkable exhibition, however, was in the burning of the paper in several places in the track of the pen-point, and for distances corresponding to several minutes of time. This is probably the most continuous and extensive exhibition of atmospheric electricity in connection with the aurora on record. The aurora itself, on the 29th of September, was a very remarkable display. It is to be regretted that precise and comparative observations were not made upon the Bain wires proceeding in different directions from this city. The phenomena, however, on the New York and Burlington lines seem to have been identical.

Dr. A. A. Gould, exhibited a specimen of a new method of electrical telegraphic recording.

Professor Guyot exhibited an interesting experiment, devised by Professor Snell, to show the motions of water contained in a tall glass jar, when made to rotate with various degrees of velocity, by means of four flat metallic radii attached to the lower extremity of a vertical axis, and situated a little above the middle of the jar. Assuming the motions of the water in this experiment to be essentially similar to those of the air in a tornado, he proceeded to explain many of the phenomena of the late tornado in Middlesex County. He was of opinion that a whirlwind was produced by the conflict of opposite winds at a considerable height above the ground, and that warm air from below and cold air from above, rushing towards the centre of the vortex, caused by their mixture the formation of snow and hail.

He also stated reasons for supposing that the apex of the

vortex would alternately approach to, and recede from, the ground, and hence, possibly, the series of points of excessive destruction observed in the track of the late tornado.

Mr. J. H. Abbot thought, that, instead of air descending from above, the rarefied air in the centre of the vortex would ascend, in consequence of its diminished specific gravity; and in proof of the existence of strong ascending currents of air within and above cumulus clouds, he referred to the fact that a dog connected with a parachute, having been dropped from a balloon by M. Blanchard in 1787, was borne above the clouds by a whirlwind, and there sustained till Blanchard had descended almost near enough to take it into the car again!

The further discussion of the subject was postponed till the next monthly meeting.

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**Three hundred and fifty-fourth meeting.**

December 3, 1851. — ADJOURNED QUARTERLY MEETING.

The PRESIDENT in the chair.

Professor Peirce, in behalf of the committee appointed to consider the arrangement into classes, and the restriction of the numbers, of the Fellows and Members of the Academy, presented the following report: —

"The present number of the Fellows and Members of the Academy is about two hundred and eighty, of whom one hundred and thirty are inhabitants of Massachusetts, about eighty reside in other portions of the United States, and about seventy are Foreign Honorary Members. They are quite unsystematically and disproportionably distributed through the various departments of science, and they have not, apparently, been selected in all cases with sufficient regard to legitimate scientific claims. The committee are of opinion, that the true remedy of this difficulty consists in the proper limitation of the number of members. For when nominations are exclusively to vacancies, and the election of one member prevents, at least temporarily, that of opposing candidates, a strong interest will be excited in the society to enroll upon their list the worthiest names, and obtain for the Academy a higher reputation for sound judgment in this respect.

## ERRATA.

Insert "as observed" before "at Castle William," sixth line from the bottom of page 259.

Instead of a dash before "potash," page 271, eighth line from the bottom of the page, substitute a comma after that word.

Substitute a period for the note of admiration on page 285, twelfth line.

The experiment exhibited by Mr. Guyot, and described on page 284, where it is credited to Professor Snell, is identical with that performed by M. de Maistre in 1832, of which an account is given in Peltier's work, "Des Trombes," page 11.